Nonlinear Analysis

Theory, Methods & Applications

Index to Volume 11, 1987

Pergamon Press

Oxford · New York · Beijing · Frankfurt
São Paulo · Sydney · Tokyo · Toronto

NONLINEAR ANALYSIS
THEORY, METHODS & APPLICATIONS

Editor: Prof. V. Lakshmikantham, Department of Mathematics, University of Texas at Arlington, Arlington, Texas 76019, USA

Editorial Secretary: Ms. S. Weber

Honorary Editorial Board

L. Cesari, *University of Michigan, Ann Arbor, MI, USA*
E. A. Coddington, *University of California, Los Angeles, CA, USA*
D. G. Kendall, *Cambridge University, Cambridge, England*
M. A. Krasnoselskii, *Institute of Control Sciences, Moscow, USSR*
J. L. Lions, *College de France, Paris 1e, France*
Ju. A. Mitsopolsky, *Director of the Institute of Mathematics, Ukrainian SSR Academy of Sciences, Repin Street—3, Kiev—4, U.S.S.R.*
L. Nirenberg, *New York University-Courant, New York, NY 10012, USA*
P. A. Samuelson, *MIT, Cambridge, MA, USA*

Associate Editorial Board

S. Ahmad, *University of Miami, Coral Gables, FL 33124, USA*
H. Amann, *Mathematisches Institut, Universität Zurich, 8032 Zurich, Freiestrasse 36, Switzerland*
A. Ambrosetti, *Scuola Normale Superiore di Pisa, Piazza Dei Cavalieri 7, 56100, Pisa, Italy*
T. B. Benjamin, *Mathematical Institute, 24–29 St. Giles, Oxford, England*
M. S. Berger, *University of Massachusetts, Amherst, MA 01003, USA*
H. Brezis, *4 Place Jussieu, Paris, France*
F. E. Browder, *Rutgers University, New Brunswick, NJ, USA*
J. Chandra, *Army Research Office, Durham, NC, USA*
R. Conti, *Via G. B. Amici 14/A 50134, Firenze, Italy*
G. Da Prato, *Classe Di Scienze, Scuola Normale Superiore, Piazza Dei Cavalieri, 56100, Pisa, Italy*
K. Deimling, *Fachbereich 17 der Gesamthochschule, Warburger Strasse 100, D-4790 Paderborn, Federal Republic of Germany*
P. C. Fife, *University of Arizona, Tucson, AZ 85721, USA*
R. P. Gilbert, *University of Delaware, Newark, DE, USA*
J. K. Hale, *Brown University, Providence, RI, USA*
T. G. Hallam, *University of Tennessee, Knoxville, TN 37916, USA*
S. Leela, *State University of New York at Geneseo, NY, USA*
P.-L. Lions, *Université de Paris IX–Dauphine, place de Lattre-de-Tassigny, 75775 Paris Cedex 16, France*
K. Masuda, *Department of Mathematics, Faculty of Science, University of Tokyo, Tokyo, 113 Japan*
J. Mawhin, *Université Catholique de Louvain, Belgium*
R. May, *Princeton University, Princeton, NJ, USA*
J. B. McLeod, *Wadham College, Oxford, England*
A. Myshkis, *Altufevscoy Shosse, Moscow, USSR*
Z. Nashed, *University of Delaware, Newark, DE, USA*
T. Oden, *University of Texas at Austin, Austin, TX 78712, USA*
C. Olech, *Instytut Matematyczny PAN, Warszawa, Poland*
P. H. Rabinowitz, *Mathematics Department, University of Wisconsin-Madison, Van Vleck Hall, 480 Lincoln Drive, Madison, WI 53706, USA*
W. C. Rheinbolt, *Department of Mathematics & Statistics, University of Pittsburgh, Pittsburgh, PA 15260, USA*
E. Roxin, *Department of Mathematics, University of Rhode Island, Kingston, RI 02881, U.S.A.*
M. Scott, *Sandia Corporation, Albuquerque, NM, USA*
R. Temam, *University of Paris XI, 91405 Orsay, France*
C. P. Tsokos, *University of Southern Florida, Tampa, FL, USA*
W. Walter, *Universität Karlsruhe, 75 Karlsruhe, West Germany*

Publishing and Advertising Offices

Pergamon Journals Ltd., Headington Hill Hall, Oxford OX3 0BW (Oxford 64881; Telex 83177).

Subscription Rates (1988)

Annual Institutional subscription rate (1988) DM 805.00 (including postage and insurance). 2 year rate (1988/89) DM 1529.50. Personal subscription rate for those whose library subscribes at the regular rate (1988) DM 204.00. Prices are subject to change without notice.

Microform Subscriptions and Back Issues: Back issues of all previously published volumes are available in the regular editions and on microfilm and microfiche. Current subscriptions are available on microfiche simultaneously with the paper edition and on microfilm on completion of the annual index at the end of the subscription year.

Published Monthly Copyright © 1987 Pergamon Journals Ltd.

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publishers if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organisations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical photocopying, recording or otherwise, without permission in writing from the copyright holder.

U.S. Copyright Law Applicable to Users in the U.S.A.

Photocopying information for users in the U.S.A.: The Item-Fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated fee for copying beyond that permitted by Section 107 or 108 of the United States Copyright Law is paid. The appropriate remittance of $3.00 per copy per article is paid directly to the Copyright Clearance Center Inc., 27 Congress Street, Salem, MA 01970.

Permission for other use: The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying.

The Item-Fee Code for this publication is: 0362-546X/87 $3.00 + .00.

Volume Contents

Volume 11 Number 1

A. A. MARTYNYUK	1	Uniform asymptotic stability of a singularly perturbed system via the Lyapunov matrix-function
T. DEL VECCHIO	5	Strongly nonlinear problems with gradient dependent lower order nonlinearity
H. BEGEHR and R. P. GILBERT	17	Non-Newtonian Hele–Shaw flows in $n \geqslant 2$ dimensions
G. M. LIEBERMAN	49	Gradient bounds for solutions of nonuniformly elliptic oblique derivative problems
J. B. LEBLOND	63	Uniqueness and continuity theorems for a system of nonlinear partial differential equations
A. RĂŞCANU	71	Parabolic stochastic obstacle problem
K. TANAKA	85	Infinitely many periodic solutions for a superlinear forced wave equation
BAU-SEN DU	105	Topological entropy and chaos of interval maps
E. N. CHUKWU	115	On the Euclidean controllability of a neutral system with nonlinear base
E. H. DE BRITO	125	Nonlinear initial-boundary value problems
J. AVRIN	139	The generalized Benjamin–Bona–Mahony equation in $\mathbb{R}^n$ with singular initial data
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 2

V. S. KOZJAKIN and M. A. KRASNOSEL'SKII	149	The method of parameter functionalization in the Hopf bifurcation problem
L. GASTALDI and F. TOMARELLI	163	A nonlinear and nonlocal evolution equation describing the muscle contraction
E. A. GALPERIN and J. M. SKOWRONSKI	183	Geometry of V-functions and the Liapunov stability theory
K. GOPALSAMY	199	Stability and nonoscillation in a logistic equation with recruitment delays
G. J. BUTLER and L. H. ERBE	207	A generalization of Olech–Opial–Wazewski oscillation criteria to second order nonlinear equations
M. COCU and A. RADOSLOVESCU	221	Regularity properties for the solutions of a class of variational inequalities

J. MOSSINO	231	Isoperimetric inequalities and nonexistence result in the Grad–Shafranov equations
A. D. IOFFE	245	Absolutely continuous subgradients of nonconvex integral functionals
F. BATTELLI and C. LAZZARI	259	Dichotomies and stability in singularly perturbed systems of O.D.E.
P. OMARI and F. ZANOLIN	275	On the existence of periodic solutions of forced Liénard differential equations
M. A. VIVALDI	285	Existence of strong solutions for nonlinear parabolic variational inequalities
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 3

A. B. RONKOV and D. D. BAINOV	297	Nonlinear integral inequalities for functions defined in partially ordered topological spaces
C. J. VAN DUYN and D. HILHORST	305	On a doubly nonlinear diffusion equation in hydrology
Y. SHIBATA and Y. TSUTSUMI	335	Local existence of solution for the initial boundary value problem of fully nonlinear wave equation
M. FALCONE and P. SAINT-PIERRE	367	Slow and quasi-slow solutions of differential inclusions
J.-P. GOSSEZ and V. MUSTONEN	379	Variational inequalities in Orlicz–Sobolev spaces
E. MIRENGHI	393	Equilibrium solutions of a semilinear reaction–diffusion system
J. A. C. MARTINS and J. T. ODEN	407	Existence and uniqueness results for dynamic contact problems with nonlinear normal and friction interface laws
S. KOIKE	429	An asymptotic formula for solutions of Hamilton–Jacobi–Bellman equations
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 4

D. A. CARLSON	437	The controllability of infinite horizon optimal control problems
R. IANNACCI and M. N. NKASHAMA	455	Nonlinear boundary value problems at resonance
M. RAMA MOHANA RAO and V. RAGHAVENDRA	475	Asymptotic stability properties of Volterra integro-differential equations
D. G. DE FIGUEIREDO	481	On the existence of multiple ordered solutions of nonlinear eigenvalue problems
M. BERTSCH, M. E. GURTIN and D. HILHORST	493	On interacting populations that disperse to avoid crowding: the case of equal dispersal velocities
A. FRIEDMAN and S. STOJANOVIC	501	A free boundary problem associated with icing in a channel
L. E. BOBISUD, D. O'REGAN and W. D. ROYALTY	527	Steady-state reaction–diffusion–convection equations: dead cores and singular perturbations
A. CAPOZZI and A. SALVATORE	539	Remarks on subharmonic oscillations of a semilinear wave equation
R. RUSSO	549	A uniqueness theorem in incompressible viscous fluid dynamics
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 5

LIU BAOPING	553	The integral operator method for finding almost periodic solutions of nonlinear wave equations
A. D. IOFFE	565	On the local surjection property
P. POLÁČIK	593	Generic hyperbolicity in one-dimensional reaction–diffusion equations with general boundary conditions
P. H. RABINOWITZ	599	On the existence of periodic solutions for a class of symmetric Hamiltonian systems
P. L. LIONS and B. PERTHAME	613	Remarks on Hamilton–Jacobi equations with measurable time-dependent Hamiltonians
DAJUN GUO and V. LAKSHMIKANTHAM	623	Coupled fixed points of nonlinear operators with applications
J. K. HALE and C. ROCHA	633	Interaction of diffusion and boundary conditions
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 6

R. R. AKHMEROV and M. I. KAMENSKIJ	651	Stability by the first approximation of ensembles of dynamical systems with applications to neutral type equations
L. TAVERNINI	665	Differential automata and their discrete simulators
K. J. BROWN	685	Nontrivial solutions of predator–prey systems with small diffusion
A. WEXLER	691	Solution of nonlinear boundary value problems coupled to a system of algebraic equations using quasilinearization
F. A. POTRA	697	Newton-like methods with monotone convergence for solving nonlinear operator equations
A. E. BERGER	719	Analysis of a constrained minimization problem modeling the orientation distribution of rod-like particles
P. DRÁBEK, and S. A. TERSIAN	733	Characterizations of the range of Neumann problem for semilinear elliptic equations
M. ALI KHAN and N. S. PAPAGEORGIOU	741	On Cournot–Nash equilibria in generalized qualitative games with a continuum of players
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 7

P. LABORDE	757	A nonmonotone differential inclusion
R. SINE	777	Rigidity properties of nonexpansive mapping
F. LAZZERI and A. M. MICHELETTI	795	An application of singularity theory to nonlinear differentiable mappings between Banach spaces
M. A. M. ALWASH and N. G. LLOYD	809	Periodic solutions of a quartic nonautonomous equation
S. D. TALIAFERRO	821	Stability of bifurcating solutions in the presence of symmetry
P. BILER	841	Exponential decay of solutions of damped nonlinear hyperbolic equations
G. CARISTI	851	Monotone perturbations of linear operators having nullspace made of oscillating functions
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 8

HUNG DINH and G. F. CAREY	861	Approximate analysis of regularized compressible flow using the fictitious gas concept
LING HSIAO and P. DE MOTTONI	877	Persistence in reacting–diffusing systems: interaction of two predators and one prey
T. GALLOUËT and J.-M. MOREL	893	The equation $-\Delta u + \|u\|^{\alpha-1}u = f$, for $0 \leqslant \alpha \leqslant 1$
M. EL-DOMA	913	Analysis of nonlinear integro-differential equations arising in age-dependent epidemic models
C. FOIAS, O. MANLEY and R. TEMAM	939	Attractors for the Bénard problem: existence and physical bounds on their fractal dimension
M. D'AUJOURD'HUI	969	Nonautonomous boundary value problems with jumping nonlinearities
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 9

P. D. LOEWEN	979	The proximal normal formula in Hilbert space
A. G. KARTSATOS	997	On the solvability of abstract operator equations involving compact perturbations of m-accretive operators
M. BIROLI and U. MOSCO	1005	Wiener estimates for parabolic obstacle problems
DUO WANG	1029	The critical points of the period function of $x'' - x^2 (x - \alpha)(x - 1) = 0$ $(0 \leqslant \alpha < 1)$
G. SEIFERT	1051	On a delay-differential equation for single specie population variations
MINGSAN CHEN	1061	Hopf bifurcation in Beck's problem
C. P. GUPTA	1075	Existence and uniqueness theorems for boundary value problems involving reflection of the argument
E. S. TITI	1085	On a criterion for locating stable stationary solutions to the Navier–Stokes equations
SOFTWARE SURVEY SECTION	I	

Volume 11 Number 10

M. Escobedo and O. Kavian	1103	Variational problems related to self-similar solutions of the heat equation
N. A. Tchou	1135	Topological regularity of the set of solutions of a differential inclusion
Y. Tsutsumi	1143	Global strong solutions for nonlinear Schrödinger equations
Y. Yamada	1155	Some nonlinear degenerate wave equations
T. W. Reiland	1169	A geometric approach to nonsmooth optimization with sample applications
G. Metzen	1185	Nonresonance semilinear operator equations in unbounded domains
S. Gutman	1193	Existence theorems for nonlinear evolution equations
J. M. Borwein	1207	Epi-Lipschitz-like sets in Banach space: theorems and examples
L. E. Bobisud and I. Stakgold	1219	Dead cores in nonlinear reaction–diffusion systems
Software Survey Section	I	

Volume 11 Number 11

J. Tsinias and N. Kalouptsidis	1229	Controllable cascade connections of nonlinear systems
G. Rojas and B. Zwahlen	1245	The critical value of a nonlinear BVP and the symmetrization of the data: conjectures and counter-examples
G. Rojas	1257	An inequality for the critical value of nonlinear eigenvalue problems
F. Albrecht and G. Villari	1267	On the uniqueness of the periodic solutions of certain Liénard equations
Jurang Yan	1279	Oscillation of solutions of first order delay differential equations
Qi-Xiao Ye and Ming-Xin Wang	1289	Travelling wave front solutions of Noyes–Field system for Belousov–Zhabotinskii reaction
R. R. Akhmerov	1303	On structure of a set of solutions of Dirichlet boundary value problem for stationary one-dimensional forward–backward parabolic equation
A. Boyarsky, W. Byers and P. Gauthier	1317	Higher dimensional analogues of the tent maps
Software Survey Section	I	

Volume 11 Number 12

P. J. RABIER and J. T. ODEN	1325	Solution to Signorini-like contact problems through interface models—I. Preliminaries and formulation of a variational equality
JONQ JUANG and P. NELSON	1351	Existence and uniqueness results for a nonlinear integro-differential initial-value problem arising in transport theory
A. J. MILANI	1371	Long time existence and singular perturbation results for quasi-linear hyperbolic equations with small parameter and dissipation term—II
R. ROY and S. M. SHAH	1383	Functions of bounded index, bounded value distribution and ν-bounded index
J. SUGIE	1391	On the boundedness of solutions of the generalized Liénard equation without the signum condition
E. J. BALDER	1399	Necessary and sufficient conditions for L_1-strong–weak lower semicontinuity of integral functionals
SOFTWARE SURVEY SECTION	I	
	i	Volume Contents and Author Index, Volume 11, 1987